

RESTRICTED

BANGLADESH

Rehabilitation & Reconstruction of Telecommunication Infrastructure in Earthquake/Tsunami-hit Areas

Project No. 7BGD/05/006
TELECOM SURPLUS

REPORT

ITU Workshop on Emergency Telecommunications for Disaster Management in Bangladesh

By

International Telecommunication Union (ITU)



29th March 2006

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By

Ms. Susan Espinueva; Mr. S.H.M. Fakhruddin; Mr. Wisit Atipayakoon

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ITU Workshop on Emergency Telecommunications for Disaster Management in Bangladesh

1 Background

After the December 2004 tsunami, the International Telecommunication Union (ITU) (viz. United Nations specialized agency in Telecommunications) has formed an integral part of a global project that seeks to provide help to all the countries that were affected by the Tsunami or vulnerable to natural disasters. Although Bangladesh was not affected by the recent tsunami, the impact of both the earthquake and the tsunami justifies ITU's immediate intervention as the country remains on the list of those countries that are most vulnerable to especially natural disasters.

The project for Bangladesh is to study the current situation of the Country's emergency communications and to give recommendations on National Emergency Telecommunication and/or National Early Warning System setup.

Under the project, the ITU in partnership with Asian Disaster Preparedness Center (ADPC) has worked closely with Bangladesh Telecommunication Regulatory Commission (BTRC) and delivered;

- a) Assessment report on Emergency Telecommunication for Disaster Management in Bangladesh, including recommendations for setting up/enhancing telecommunications as such;
- b) Local workshop on Emergency Telecommunication for Disaster Management

This report is an outcome from the workshop which was jointly organized by BTRC and ITU. The one-day workshop was conducted on 29th March 2006 at BRAC Centre Inn in Dhaka, Bangladesh.

1.1 Objectives of the Workshop

- To present the ITU Report on the Emergency Telecommunications for Disaster Management in Bangladesh developed by ITU consultants and to discuss recommendations presented in the report;
- To present the current and on-going initiatives of government and international agencies and NGOs, particularly in the area of Early Warning Systems and Telecommunications for Disaster Management;
- To identify issues on telecommunications to be utilized as part of National Early Warning Systems (EWS) and enhancement of Emergency Telecommunications for Disaster Management;
- To formulate recommendations and the corresponding action plans, if possible based on identified issues in the workshop, including the issues and recommendations presented in the ITU report.

1.2 Participants

Invitation was sent to government agencies whose mandates concern disaster management/emergency telecommunications and to private telecom operators, as well as international agencies and NGOs who can play a vital role in emergency communications.

The participants include key officials and representatives from the *Ministry of Food and Disaster Management (MoFDM)*; *Bangladesh Police*; *Armed Forces Division (AFD)*; *Bangladesh Meteorological Department (BMD)*; *Comprehensive Disaster Management Programme (CDMP)*; *Bangladesh Power Development Board (BPDB)*; *CARE Bangladesh*; *Cyclone Preparedness Programme (Red Crescent)*; *Center for Environmental and Geographic Information Services (CEGIS)*; *Economic Relations Division (ERD)*; *Bangladesh Telegraph and Telephone Board (BTTB)*; *Disaster Management Bureau (DMB)*; *Flood Forecast and Warning Center (FFWC)*; *AKTEL*; *Association of Telecom Operators of Bangladesh (ATOB)*; *Banglalink*; *Telekom Malaysia International (Bangladesh) Limited*; *DTCL-PSTN*; *NTL-PSTN*; *UNDP* and *Media*.



Figure-1: Workshop Participants

Full list of participants is in Appendix 2.

1.3 Working Method

The workshop was divided into two sessions. The morning session was for presenting the ITU report and on-going activities by individual organizations. The afternoon session was dedicated for discussion.

At the end of the workshop, issues were identified with some recommendations. *Most importantly, the meeting agreed to adopt the concept of setting up National Emergency TeleCOommunication Management team (NETCOM) and an interim team had been formed whose members consist of representatives from participating organizations.*

Workshop agenda is in Appendix 1.

2 Summary of Presentation

The workshop commenced with a brief introduction by Mr. N.H. Choudhury, National Project Coordinator BTRC-UNDP project. On behalf of the Chairman of BTRC who was not able to join the workshop due to his sickness, Mr. Justice Md. Abdus Salam, Commissioner of the BTRC gave the welcome remarks.

Mr. Abdus Salam briefed the participants on the purpose of the workshop. He acknowledged the initiative of ITU as well as ADPC in conducting the study and the workshop and cited the importance and relevance of such undertaking to the country as far as disaster management is concerned. In absence of the Chairman BTRC, Mr. A.M.M. Reza-e-Rabbi, Vice Chairman presided over the function.



Figure-2: (from left to right) Mr. Justice Md. Abdus Salam; Mr. A.M.M. Reza-e-Rabbi; Mr. Larry Maramis; Mr. Wisit Atipayakoon

After the welcome address, Mr. Larry Maramis, Deputy Resident Representative of UNDP underlined the importance of this workshop and urged participants to discuss and articulate on their concerns. He also stressed that the workshop should consider making technology work for the poor especially during disasters. Mr. Maramis recalled the UN Millennium Development Goals (MDGs) and how it could be linked up with disaster management. In particular, the 8th goal which is “*Developing a global partnership for development*” is extremely vital to developing or improving communications for disaster management. Furthermore, he cited one of the UNDP’s on-going activities in Bangladesh; CDMP (Comprehensive Disaster Management Program).

Mr. A.M.M. Reza-e-Rabbi, Vice-chairman of BTRC, expressed appreciation to ITU, ADPC and BTRC for organizing the workshop.

2.1 Presentation by ITU

Mr. Wisit Atipayakoon representing ITU regional office for Asia and the Pacific introduced the ITU and its mandate particularly for each of the three sectors (ITU-T, ITU-R, and ITU-D). Overview of each sector's role in Emergency Telecommunications was also given.

This workshop and the assessment report are an initiative of ITU-D. It is part of an umbrella project to provide expert services for rehabilitation and reconstruction of telecommunications infrastructure for tsunami-hit countries and especially in four countries namely, Maldives, Sri Lanka, Indonesia, and Bangladesh.

Immediately after the 2004 tsunami, ITU contacted the countries that had been affected by the disaster and offered them assistance. In the immediate term, the offer was to assist the countries with Inmarsat satellite terminals with the airtime paid by the ITU.

Although there was no record of a tsunami prior to December 26, 2004 reaching the coast of Bangladesh, there is some evidence that the country is exposed to the threat of such a disaster, especially a local one with very little warning lead time. Apart from this, a number of lives were lost and economic disruption resulting from infrastructure destruction as experienced in the past disaster events. The impact of both the earthquake and the Tsunami justifies ITU's immediate intervention as the country remains on the list of those countries that are most vulnerable to especially natural disasters. For this reason and in response to ITU offer of assistance, the Bangladesh authorities have requested expert support in assessment of the telecommunication infrastructure of the Country and the concept of Emergency Telecommunications.

Finally Mr. Atipayakoon drew attention to ITU-D publication which is "*Handbook on Emergency Telecommunications*" and it is available on the ITU web site at www.itu.int/itu-d/emergencytelecoms

2.2 Introduction and Presentation by ITU Consultant

Ms. Susan Espinueva, an ITU consultant on this project, presented the project background, summary of the assessment and recommendations, as well as workshop methodology.

She started by giving the definition of **Emergency**: "*Emergency is a situation requiring urgent response. Depending on the circumstances, initial response will be provided by whoever is present, using whatever means are available. Any other additional intervention deemed necessary can be mobilized through **Telecommunications**. An emergency situation might develop into a **Disaster**, either due to its nature, or as a consequence of insufficient response to the initial event*"

The assessment was conducted in September 2005 by representatives from ITU regional office for Asia and the Pacific and Asian Disaster Preparedness Center (ADPC) with the country counterpart BTRC. The methodology of the study included visits and discussions

with relevant agencies; distribution of questionnaires; and preparation of the assessment report.

Initial findings and constraints were summarized as follows:

- Bangladesh has a robust telecom system in place;
- Government agencies have yet to upgrade their existing telecom networks;
- Most government agencies rely on the Bangladesh Telegraph and Telephone Board (BTTB) transmission networks;
- Cyclone Preparedness Program (CPP) has a very effective communication network at the village level;
- Emergency communication is not clearly defined in the Standing Orders on Disasters;
- Disaster contingency plans have yet to be institutionalized (by private telecom operators);
- No specific rules to be activated in case of an emergency situation;
- Limited budget for maintenance;
- Existing telecom facilities are based on the cyclone in 1991 and the flood in 1998. However, there are no data on tsunami during the past.

Ms. Espinueva also provided the participants with some thoughts to consider in designing a framework for emergency telecommunication such as (a) Rely on proven established technologies; (b) Enhance GSM and backbone infrastructure; (c) Cost of ownership including O&M; (d) Standardized solutions are cheaper

Based on the findings in the study, the following recommendations were drawn:

- Formation of the National TeleCOmmunication Management (NETCOM) team
- Identification and training of ICT technicians and radio operators
- Conduct of regular communication drills
- Use of satellite phones
- Adoption of SMS use in emergencies
- Recommendations for telecom operators; Establish Priority; Service level agreements; Enable national roaming

Details of each recommendation can be found in the ITU report

Finally, Ms. Espinueva described the method of conducting the workshop where all presentations will be carried out in the morning to be followed by the discussion in the afternoon. She requested the participants to take note of their questions, comments and recommendations which will all be taken up in the discussion.

2.3 Presentation by BTRC

Mr. Md. Abdur Rashid, the Director of BTRC, Spectrum Management, presented on “*Development of Frequency band for Public Protection and Disaster Relief (PPDR)/Disaster Management in Bangladesh*”.

BTRC is an independent commission which was established in 2002 under the Bangladesh Telecommunication Act, 2001. Its mission is to: Increase the teledensity to at least 10 telephones per 100 inhabitants by 2010; Establish a phone in every village by 2006; Create an enabling environment and customer choice for ICT services; Promote ICT applications to support socio-economic development; Encourage joint Public-Private cooperation.

ITU identified frequency bands for PPDR: 746-806 MHz and 4940-4990 MHz are under development. BTRC is considering using 773-776 MHz band for base mobile or fixed (repeater) transmissions, while 803-806 MHz band for mobile or fixed (control) transmissions. These two bands are designated for use with narrowband emissions having a channel bandwidth of 6.25 KHz.

More details of BTRC’s Narrowband channel plan and Wideband segments can be found in his presentation handouts.

2.4 Presentation by DMB

Mr. Md. Abu Sadeque, the Director of Disaster Management Bureau (DMB) represented the Ministry of Food and Disaster Management (MoFDM). He first introduced vision and mission of the Ministry and described its organizational structure as shown in the Figure-3 below.

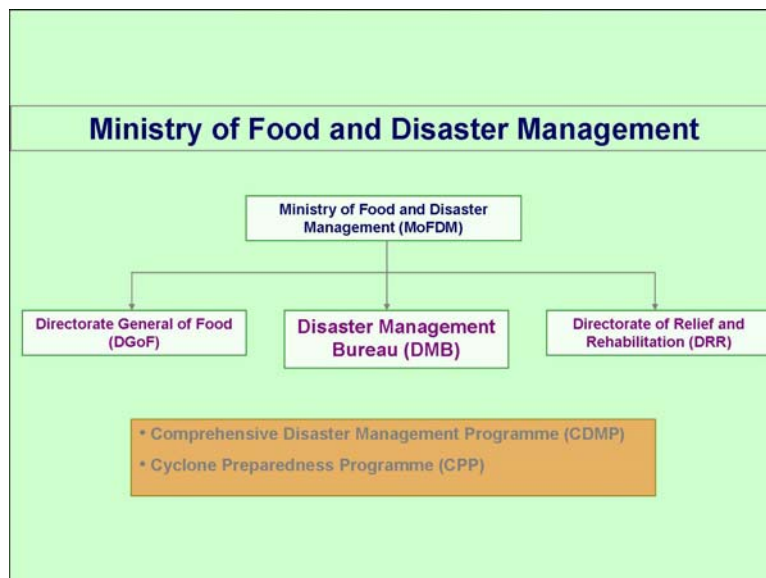


Figure-3: Organizational Structure of MoFDM

Part of DMB's strategic plan is the establishment of National Disaster Management Information Center (DMIC). The DMIC will strengthen or enhance the activities of the existing Emergency Operations Center (EOC) through effective implementation of information sharing among disaster management agencies and communities for all hazards. The DMIC network is linked with the Joint River Commission (JRC), Federal Emergency Management Agency (FEMA), Asian Disaster Reduction Center (ADRC), Relief Web, etc.

The DMIC's immediate plan is to have its network linked to the districts while its medium and long-term plans include the connection to the Upazillas and Unions, respectively.

The EOC is located at the MoFDM and is connected with all the District headquarters with HF radio links. In addition to the HF radio, EOC also uses BTTB transmission connections and Cellular connections to ensure fully functional telecom links between EOC and District headquarters during emergencies.

The DMB is currently implementing the *Comprehensive Disaster Management Programme (CDMP)* under the MoFDM with assistance from UNDP. The network of the CDMP is shown in Figure-4.

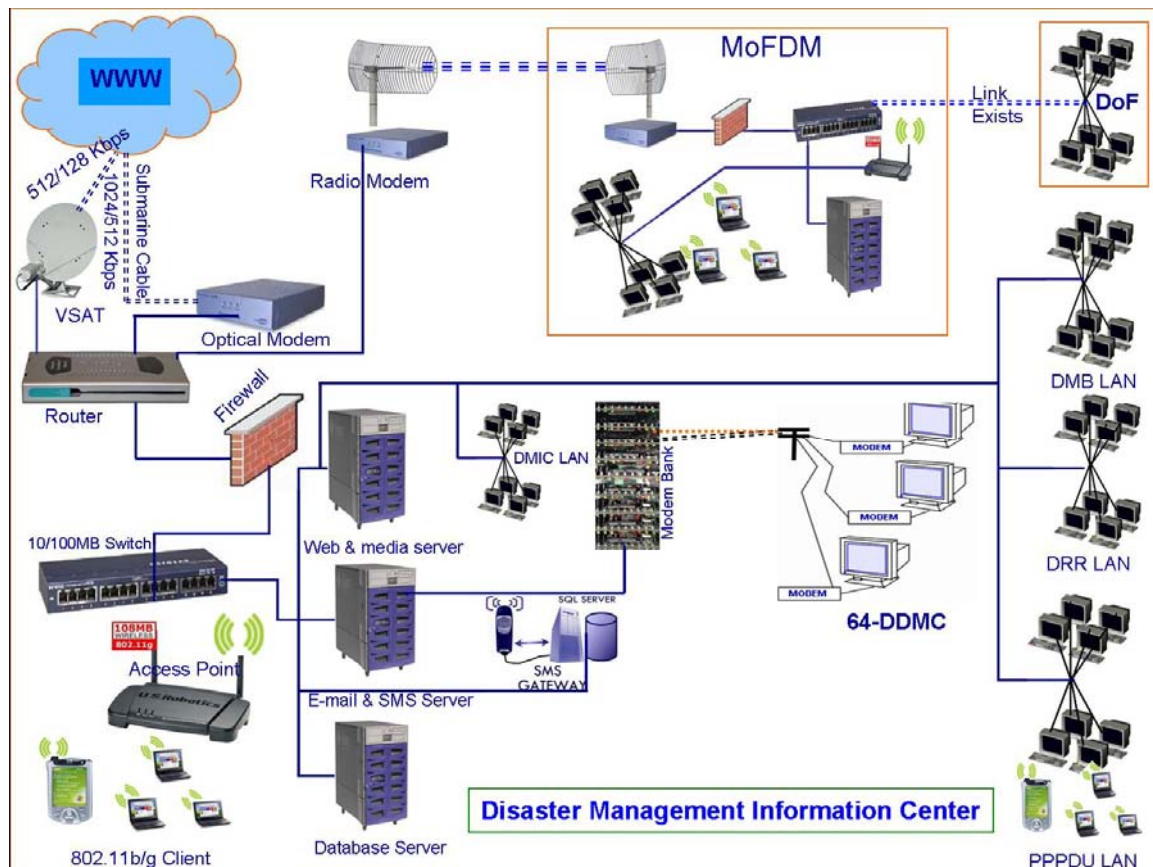


Figure-4: The schematic of the Disaster Management Information Network

In addition, existing early warning dissemination systems is also being undertaken by two other agencies such as:

- *Cyclone Preparedness Programme (CPP)* which is also under the MoFDM and with assistance from Red Crescent. The CPP propagates emergency HF/VHF radio bulletins from BMD through a community volunteer network;
- *Flood Forecasting and Warning Center (FFWC)* under Ministry of Water Resources (MoWR) sends daily email, fax and couriered water level prediction bulletins to national and district agencies, more frequently during emergencies.

Finally, Mr. Abu Sadeque gave recommendations that: *(a) Telecom infrastructure should be disaster resistant; (b) Private operators should link with DMIC for transferring message/warning signals; (c) Satellite phone may be used in the disaster prone area during emergency; (d) Toll Free Number for the concerned institutions.*

2.5 Presentation by BMD

Mr. Akram Hossain, Director of the Bangladesh Meteorological Department (BMD) Outlined the organization's mandate and objectives. BMD's overall activities include: data collection around the clock, information dissemination for disaster preparedness and mitigation and promotion of research activities for sustainable development and information and education programme to mitigate the impacts of disaster.

After the 2004 tsunami, Bangladesh is linked with PTWC and JMA through the Global Telecommunication System (GTS), fax, telephone and internet to get tsunami warning information. BMD's cyclone dissemination network is also utilized for dissemination of tsunami warning information.

BMD's telecommunication systems include Microwave and VSAT links between Dhaka and New Delhi. Currently, the speed is 2,400 bps however it is being upgraded to 64 Kbps.

On going project in BMD are:

- Establishment of Numerical Weather Prediction (NWP) system
- Establishment of three Seismic Observatories
- Establishment of Meteorological and Hydrological Doppler RADAR
- Establishment of new observatories in the riverine area
- Upgrading of Cox's Bazar and Khepupara RADARs



Figure-5: BMD's Warning Message Dissemination Plan

2.6 Presentation by ATOB

The presentation was given by Mr. Fazlur Rahman, Director of TMIB, who represented the Association of Telecom Operators of Bangladesh (ATOB).

The most disaster prone areas of Bangladesh are off-shore islands in the Bay of Bengal and the river banks. *Little or no telecommunication facilities were available in those areas a few years back before BTTB and private operators implemented the Cellular, WLL, radio trunking, VSAT, Internet.*

According to Mr. Rahman, satellite and HF radio are the telecom infrastructures that are disaster-proof since these need no facilities but the equipment to run and operate.

The administrative organizations and public institutions that are working closely with the Disaster Management Bureau should be linked with BTTB network as well as private operators' networks to provide redundancies. This will enable the DMB to broadcast urgent information to all the organizations/bodies effectively. Telecommunication equipment in Cyclone Shelters must be used regularly to ensure their operational status during emergencies.

Since Cyclone / Flood Relief Shelters are to be used for Multi Purpose activities like public call office (PCO), hospitals (Tele-Medicine) and schools (Tele-Education) during a disaster, these shelters must be equipped with Telecommunication Links.

Mr. Rahman recommended the HF radio as suitable for emergency telecommunication and therefore, should be in place for disaster responses and preparedness.

2.7 Presentation by FFWC

Mr. Saiful Islam, Sub-divisional Engineer of the Flood Forecasting and Warning Center (FFWC) gave an introduction of FFWC and presented the activities of the Center.

According to Mr. Islam, about 68% of the country is vulnerable to flood and that at least 22% of the country is flooded every year; during normal flood, about 25-30% of the area is inundated while 66% area is inundated in the case of a severe flood.

The types of flooding in Bangladesh are: river flood; flash flood; rain-fed flood; flood due to storm surges; and urban flood.

The mode of data collection/transmission is through the following:

- *Wireless network*: consists of 86 stations over the country; 6 frequency bands are allocated, however bad weather affects the communication. In addition, power failure is another big problem.
- *Mobile telephone*: total 15 stations particularly in coastal belt; problems are high cost and limited coverage of mobile network
- *Pilot telemetry*: 5 out of 14 stations are operational; a challenge is the difference with present manual data
- *Land telephone*

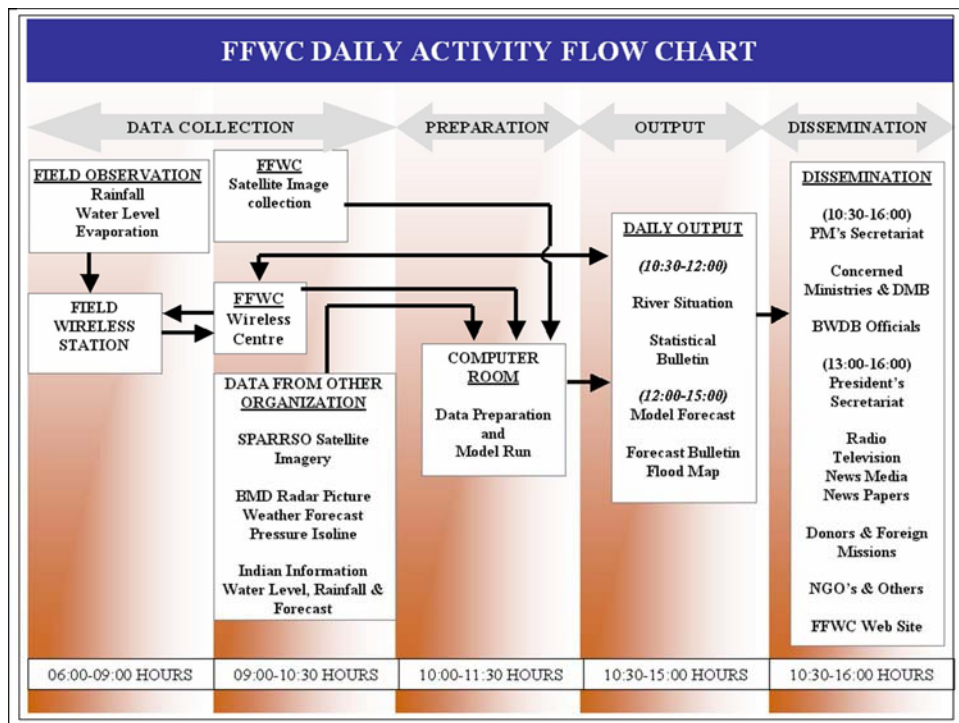


Figure-6: FFWC Daily Activity Flow Chart

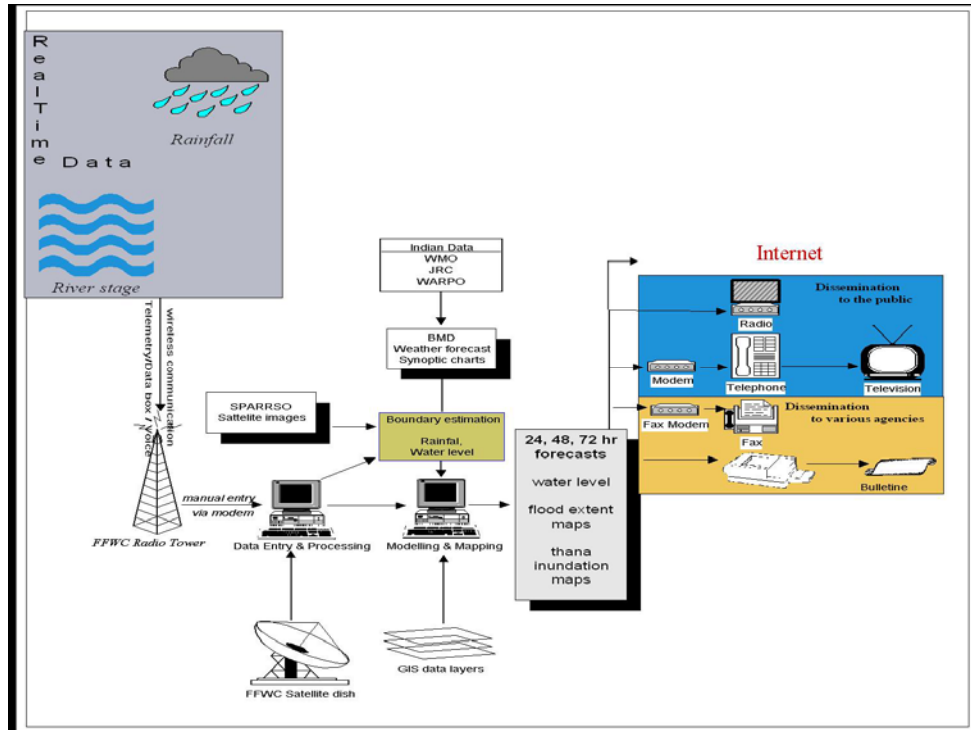


Figure-7: FFWC Proposed Dissemination/Communication Network

Mr. Islam identified the current limitations of the Center as follows:

- Forecast lead time expected need to be increased from 72 hrs to 5 days;
- Enhance dissemination scheme through the Internet, email, telephone/fax, TV/Radio, newspaper, control room;
- People do not take the warning seriously. There is a need to establish a feedback mechanism on the readability of the forecasts.

Finally Mr. Islam stressed that “Country wide high speed, reliable and cheaper Internet connectivity may change the scenario dramatically”.

2.8 Presentation by BPDB

Mr. A.N.M. Obaidullah, Sub-divisional engineer of Bangladesh Power Development Board (BPDB) started his presentation by giving an overview on natural disasters in the country which includes flood, cyclone, and earthquake.

For the day to day routine works and system operation, Power Sector maintains its own communication system called Power Line Carrier (PLC) Communication using its high voltage transmission lines connecting all the power plants and high voltage sub-stations (230 KV & 132 KV) through the Load Dispatch Center.

The functions of BPDB include Telecommunication, Tele-protection, Data-transmission, Supervisory Control and Data Acquisition (SCADA), Economic Load Dispatching etc.

The frequency band of the existing PLC communication system is very low (100 KHz to 500 KHz) and its speech band is only 4 KHz. To overcome the low bandwidth limitation and to expand communication system, installation of optical fiber over high voltage transmission lines throughout the whole country is currently being undertaken.

At present, about 500 Km optical fiber (single mode) has already been installed around Dhaka and Dhaka to Chittagong route as OPGW (Optical Ground Wire) without having any terminal equipment.

Under NLDC project about 1450 Km optical fiber will be installed on the existing transmission lines throughout the whole country by FY 2007.

After completion of NLDC project most of the district towns of Bangladesh will be connected at Cox's Bazar with the optical submarine cable. About 782 Km 230 KV and 527 km 132 KV new transmission lines will have Optical Ground Wire.

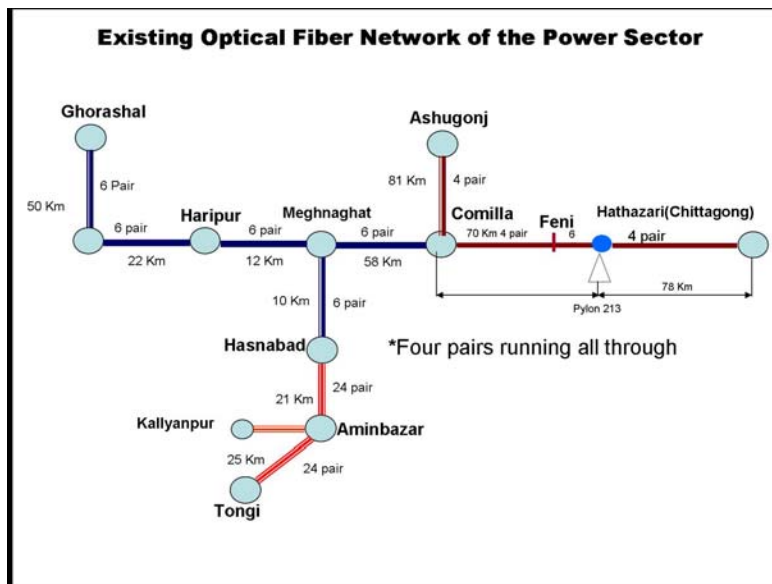


Figure-8: Existing Optical Fiber Network of the BPDB

Microwave System: One Microwave link between Faridpur and Manikganj has been planned to make redundancy in case of disruption of Sirajganj – Ashuganj Optical link between the East and West part of the country. The link shall operate in the 7.5 GHz band and shall carry one or more STM-1 Signals.

In conclusion, Mr. Obaidullah enumerated some ways and means that can be accessed or utilized as follows:

(a) During Disaster, PLC of the power sector could be a good choice for emergency communication, where normal Tele-communication will be impossible;

(b) To extend the service of PLC system as backup communication during disaster especially in the costal belt, microwave link with the PLC system may be considered;

(c) The Optical network of Power Sector will be much reliable and safe in comparison to other Optical Fiber Network because this optical network has been installed over the high voltage transmission line and so it is free from most of the unwanted interruptions.

2.9 Presentation by CEGIS

Representing the Center for Environmental and Geographic Information Services (CEGIS) was Mr. Ahmadul Hassan, Senior Water Resources Planner who gave a presentation on “Communication and Dissemination of Community based Flood Information System in Bangladesh (CFIS)”. The system aims to disseminate flood level information to the community with ample lead time before the flood occurs.

The formats of information dissemination are: *Billboard network* used for giving prediction of flood extent on high-resolution image of community and prediction of trend and water level rise; and the *Flag network* used for giving a predicted water level rise when close to or above danger level.

CEGIS mainly develop models for flood and other hazard forecasting and they used the existing telecommunication for dissemination of early warning. Their pilot project of CFIS used SMS message for all mouzas within the targeted union through SMS, and subsequently displayed on bulletin board. The practicality was sometimes SMS communication disrupted due to network failure, recharging problem and disconnected mobile due to irregularities in bill payments, error in making SMS message to send early warning, etc. SMS message system need to make more robust for information dissemination in the emergency periods. It was found that better communication system can help society and GoB involved together to disaster risk management. CEGIS has strong information packages and database which can build a good communication system in the community level.

2.10 Presentation by BTTB

The Director of Transmission, Bangladesh Telegraph and Telephone Board (BTTB), Mr. Shahidul Alam gave overview about the organization’s mandate and its telecom network infrastructure.

BTTB is a PSTN service provider in public sector providing data services and leased lines. Its networks consist of Microwave backbone using SDH/PDH radio; Optical Fiber backbones which its length is about 1,396 Km. All Upazila Headquarters are connected to District Headquarters by point to point Radio links.

The total number of digital exchanges is 270 with about 915,000 subscribers. Direct dialing facilities for national and international calls are available from 64 Districts. DDN (Digital Data Network) nodes are operational in 41 Districts where the Board Band Internet services are available for corporate users. Internet services are available for 64 Districts and 206 Upazillas.

Mr. Alam stressed that Disasters Management Bureau can act as a coordinator to integrate the services of all public utility departments to cope with the havoc caused by natural disaster. He also suggested that BTTB can render all its existing facilities using own resources and recommended sharing resources with other private Operators during disasters.

In addition to existing facilities, BTTB can provide services or procure equipments such as long haul VHF point to point radio, and HF radio sets. With this equipment in place, communities in remote areas can be reached at the time of natural disasters such as cyclone, earthquake, and tsunami

2.11 Presentation by CPP

In 1965 the Bangladesh Red Crescent Society formerly National Society requested the International Federation of Red Cross and Red Crescent Societies (IFRC) to support the establishment of a warning system for the population living in the coastal belt. In 1966 the International Federation and Swedish Red Cross began the implementation of a pilot scheme for Cyclone Preparedness which consisted of warning equipments and was operational in 299 locations.

Mr. Ruhul Amin Sikder, the Director of Cyclone Preparedness Programme (CPP), presented how the volunteers organization composed of Unit Committee (12 volunteers), Union Committee (10 units), and Upazila (sub-district) Committee (10 unions) function during disasters. At present, there are about 34,000 volunteers.

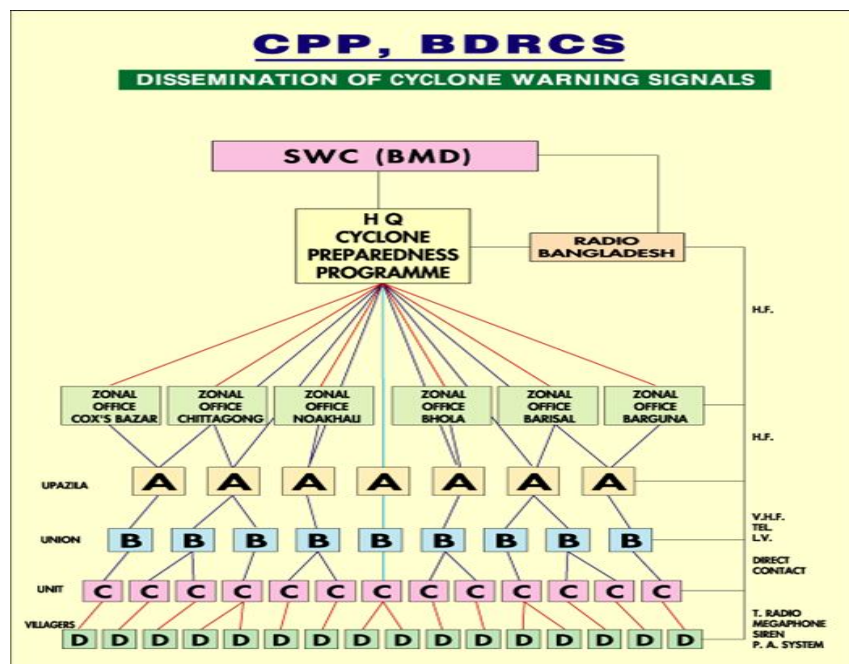


Figure-9: Dissemination Scheme for Cyclone Warning Signals

The main responsibilities of the volunteers are: Disseminating cyclone warning to the community people; assisting people in taking shelter and relief/rehabilitation operations; provide first aid and rescue people affected by a cyclone; and assisting in the co-ordination of disaster management and development activities.

Other than the mandatory responsibilities, the volunteers are very much involved in performing social welfare activities through coordination with local government administration, NGOs, Upazila disaster management committee, educational institutions, religious institution, social club and other agencies in the event of road accident, fire, boat capsize, river erosion, epidemic etc.

The communication networks consist of HF and VHF Radio with about 129 radio stations.

2.12 Presentation by Regional IOTWS

Mr. S.H.M. Fakhruddin presented the initiatives taken by the US government for Regional Indian Ocean Tsunami Warning System (IOTWS) program. The program aims to strategic support to the five countries (Indonesia, Sri Lanka, India, Thailand, and the Maldives) under UNESCO ICG/IOTWS towards the development of an Indian Ocean Tsunami Warning System (IOTWS). Mr. Fakhruddin discussed about the program approach, ongoing activities and future plans of the program.

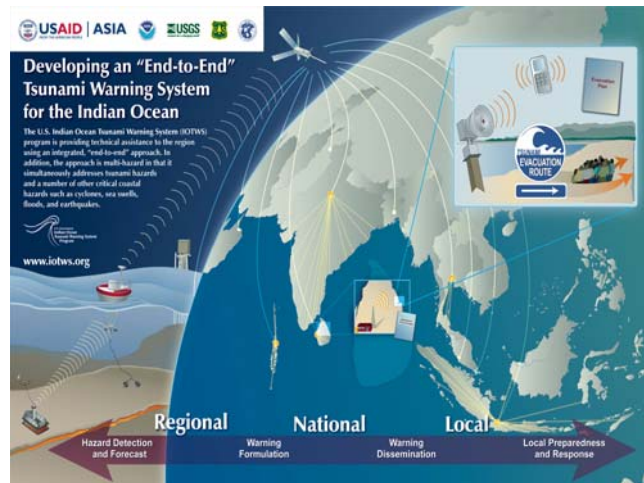


Figure-9: End-to-End Tsunami Warning System

The program approaches to develop integrated “end-to-end” warning system, regional, national, and local level interventions, multi-hazard, addressing tsunami and other coastal hazards simultaneously, replication of best practices and catalytic impact and leveraged resources. Under IOTWS program in Sri Lanka, the Incident Command System for emergency response management for disasters, Tsunami Resilient Communities initiative, seismology exchanges and equipment upgrades, upgrade GTS and WAN systems, Radio and Internet Communication (RANET) system, strategic support on how best to manage national warning centers and to formulate and communicate warnings programs are going on. More information of the US IOTWS is available in the program website <http://www.us-iotws.gov>.

2.13 Presentation by POLICE

The last presentation was given by Mr. Md. Mosaraf Hossain from AIG Telecom, POLICE. Bangladesh Police has a robust radio communication network all over the country up to the Thana level. During emergency situations, the Police can send warning

messages within a very short period using its radio communication. The Police are looking forward to the conversion of analogue systems into digital systems to strengthen their communication network.

3 Summary of Discussion

The afternoon session was dedicated for discussion in order to identify issues and give recommendations regarding Emergency Telecommunications. The summary of issues and concerns raised during the discussion are given below.

- Bangladesh is not deficient of resources in term of telecommunication facilities, but lack of coordination among agencies with BTTB and telecom operators has been a key problem. For instance, agencies involved in disaster mitigation activities are not aware that individual's telecom network infrastructure can be shared with these agencies. It is therefore recommended that Center Coordination Committees are formed: one at an international level, and the other at a national level, where all organizations/agencies can have their representatives.
- DMB have concrete programmes on disaster management through consultancy services a couple of years back including workshops/trainings but there is a need to establish a feedback mechanism to evaluate if the objectives of such initiatives have been realized.
- Emergency systems must be disaster proof and it was recommended by the representative from ATOB that HF and Satellite (VSAT) communications are suitable for emergency telecommunication.
- Redundancy in communication is already in place, what is needed is cooperation among the concerned agencies and institutions. The combined networks of BTTB and the private operators should be able to provide telecommunication facilities in the disaster prone areas of Bangladesh, in a much more resilient manner.
- Each cyclone shelter should be equipped with communication system particularly telephone system designed for multi-purposes (i.e. public call office, hospital-tele-medicine, school-tele-education) and must be used regularly.
- DMB was unanimously endorsed to take the lead on coordination among agencies.
- Satellite phones, toll free emergency number for emergency operators are required.
- DMB has been collaborating with private operators, however the DMB encountered some difficulties. For instance, DMB requested operators to provide their contingency plans but only 3-4 organizations responded. But through this workshop where telecom operators expressed their cooperation, the DMB will

take the opportunity to invite private operators and discuss a joint undertaking between private operators and DMB.

- BPDB is willing to share its network infrastructure using power line for the disaster management. In fact, BPDB has a very robust communications network, however some agencies are not aware of the availability of these telecom facilities. On the other hand 1450 Km optical fiber will be installed on the existing transmission lines throughout the whole country by 2007 and then this line will be much reliable and safe as they are installed over the high voltage transmission line.
- Mobile operators can play a very important role in Emergency Telecom particularly using SMS or Cellular Broadcasting technologies. Currently SMS is being used in disseminating warning messages by some agencies at a certain extent. However, a concern was raised on who should bear the cost of SMS dissemination by the Government during an emergency situation. The representative from ATOB stated that mobile operators are willing to cooperate and discuss with the Government on this matter. DMB recommended that discussion and agreements among DMB and the telecom operators must be formalized through a Memorandum of Understanding (MoU).
- The Prime Minister office has a supervision role in disaster management and provides assistance to DMB as requested. The representative from the Prime Minister office suggested that the organizations/offices to be linked have to be decided at the national level.
- Disaster Management Information Center under the CDMP is already doing the need assessment throughout the country to find out the needs of stakeholders in disaster management what data and information are needed including the gaps in communication. This has started since last month and CDMP will share the result with all stakeholders.
- In view of the issues and concerns raised, the recommendations from ITU to form a NETCOM committee was well accepted and the participants considered the recommendation very relevant. The participants agreed that the recommendation should be adopted and that the NETCOM committee should be spearheaded by DMB who has direct responsibilities on disaster management. BTRC who initiated this workshop will be part of the team and help coordinate with ITU in future work.
- The participants identified the organizations/agencies that should be part of the NETCOM however some of the organizations mentioned were not represented in the workshop. Therefore it was suggested that the committee formed during the workshop will be an Interim Committee and DMB will ensure that other concerned agencies will be invited when DMB will convene the NETCOM Committee.

- The representative from UNDP reminded the participants that the NETCOM committee must focus on telecommunication aspect of the disaster management and it should compose of small number of organizations whose responsibilities involve telecommunications or whose network communications can be used for emergency situations.
- DMB's Standing Order on Disasters (SOD) is being revised and will be renamed *Standing Order on Disaster Management (SODM)* which will include earthquake and tsunami. Hence, formation of the NETCOM Committee and its activities will be integrated in the SODM.
- The first meeting NETCOM Committee was tentatively scheduled on the *second week of April at DMB office*. The DMB will notify the concerned organizations/institutions about the meeting through a letter or an email.
- The ITU Assessment Report will be revised and sent to all participants 1-2 weeks later.



4 Issues & Recommendations

ITU Workshop on Emergency Telecommunications for Disaster Management in Bangladesh

29th March 2006

Issues/Concerns and Recommendations

No.	Issues/ Concerns	Recommendations
1.	Coordination among all agencies having telecommunications facilities during emergency	National level committee (NETCOM) will be formed under the leadership of DMB and representatives of other agencies (i.e. PDB, Telecom operators, FFWC, Police, Armed Forces, BMD, CPP, etc). BTRC will coordinate with ITU and support the DMB.
2.	Formulation of an Emergency Telecommunication Plan	NETCOM will be formed as early as possible and will work on the plans identified.
3.	Updating the old equipments (e.g. CPP networking system)	NETCOM will look in to this matter.
4.	Redundancy in telecommunication systems is available	NETCOM will look in to this matter.
5.	Regular uses of telecommunications in a multipurpose ways with a holistic manner	NETCOM will look in to this matter.
6.	Utilization of power line/ communication can be done in coordination with BPDB and the Ministry of Food and Disaster Management	NETCOM will look in to this matter.
7.	DMB need to enhance its link with BMD to get information quickly.	Need for some MoU and financial support to implement this kind of initiatives. NETCOM will look into this matter.

No.	Issues/ Concerns	Recommendations
8.	Networking with the inland river port using the GPS network can be a good tracking in case of emergency. GPRS system must be provided by the mobile operators.	NETCOM will look into this matter.
9.	Need an emergency control room by the private operators to disseminate the disaster information.	DMB will take initiatives to sign the MoU with mobile operator(s) to disseminate information free of charge.
10.	Formation of a NETCOM Committee for emergency telecommunication and scope of work (SoW) of the Committee must focus on emergency telecommunications.	DMB can take the lead to convene the interim committee since DMB has the mandate on disaster management. BTRC will expedite the meeting and other issues. There need to identify the functions and activities of the Committee.
11.	Translation of technical information into local usable language and a standard format of warning messages i.e. CAP (Common Alert Protocol)	Although this is important, the issue is beyond the scope of the NETCOM Committee.

5 Recommendations on Further Assistance

As an interim NETCOM committee has been formed, it is recommended that DMB as a lead of this initiative coordination with BTRC convene the first meeting of the committee. During the first meeting, Terms of Reference (TOR) must be determined. Members of the Team will be appropriately re-selected taking into consideration organization's mandates, their responsibilities and contribution in Emergency Telecommunications aspect for Disaster Management in particular.

It is important to emphasize here the ITU's recommendation on NETCOM committee formation:

A National Emergency TeleCommunication Management Team/Committee should form part of the National Disaster Management Center. Main objective of the team/committee is to build up cooperation among government agencies and optimize existing communication infrastructure and skills/experiences with clearly defined responsibilities of each member of the team/committee.

The NETCOM Team/Committee should consist of representatives from authorities, institutions, organizations and companies actively involved in emergency communication i.e. DMB, BTRC, BTTB, BMD, FFWC, CPP, POLICE, etc , by staff, equipment or services. The creation of the team/committee should be discussed among the said authorities to identify the main sponsor or the Leader.

The designated Team Leader must take a proactive role in assuring available means of communication for selected user groups in any foreseeable state of emergency in any part of the country, promote robust functionality and fast recovery of public voice, text and data services in case of emergencies, inform and liaise with institutions involved in emergency and disaster management and Initiate workgroups to create solutions and activities in specific areas.

RECOMMENDED NEXT STEP: BTRC should officially inform all stakeholders concerned about the outcomes of the ITU workshop and the formation of the NETCOM committee. DMC should take the initiative and lead in convening the first meeting of the NETCOM committee.

ITU Regional Office for Asia and the Pacific should assist BTRC in facilitating the next meeting or workshop for this NETCOM committee, and ensure adoption of recommendations as presented in the ITU report. In addition, ITU in collaboration with ADPC and other interested international agencies should provide consultancy service to address some difficult issues as raised and requested by the committee.

Appendix 1: Agenda of the Workshop

	ITU Workshop on Emergency Telecommunications for Disaster Management in Bangladesh		
Date: 29 th March, 2006			
Venue: BRAC Centre Inn			
TIME	SUBJECTS	SPEAKERS	
SESSION 1:			
08:30 – 09:00	Registration		
09:00 – 09.10	Welcome Remarks	– Mr. A.M.M. Reza-e-Rabbi Vice Chairman, BTRC	
09:10 – 09.20	Speech by Chief Guest	– Mr. Muhammad Omar Farooq Chairman, BTRC	
09:20 – 09.30	Speech by Special Guest	– Mr. Larry Maramis Deputy Resident Representative, UNDP	
09:30 – 09.40	ITU Overview & Project Background	– Mr. Wisit Atipayakoon ITU Regional Office for Asia and the Pacific	
09.40 – 10:00	Working method of the workshop and Overview of ITU Assessment Report	– Ms. Susan Espinueva ITU Consultant	
10:00 – 10:30		Tea Break	
10:30 – 13:00	Presentations by individual agencies		
	▪ Status of Early Warning System and Emergency Telecommunications in Sri Lanka	– Mr. Md. Abdur Rashid, Director, BTRC	
	▪ Presentations on on-going activities related to Emergency communications/Early Warning Systems		
	– DMB, Director MIM and Planning	– Mr. Md. Abu Sadeque	
	– BMD, Director	– Mr. Akram Hossain	
	– FFWC, Sub-Divisional Engineer	– Mr. Saiful Islam	
	– BPDV, Sub-Divisional Engineer	– Mr. A.N.M. Obaidullah	
	– POLICE, AIG Telecom	– Mr. Md. Mosaraf Hossain	
	– CEGIS, Senior Water Resources Planner	– Mr. Ahmadul Hassan	
	– BTTB, Director, Transmission	– Mr. Shahidul Alam	
	– CPP, Director	– Mr. Rahul Amin Sikder	
	– ATOB, Director of TMIB	– Mr. Fazlur Rahman	
	– US-IOTWS, Technical Specialist	– Mr. S.H.M.Fakhruddin	
13:00 – 14:00		Lunch	
SESSION 2: Discussion			
14:00 – 14:10	Summary of Presentations	– Mr. S.H.M.Fakhruddin (ITU Consultant)	
14:10 – 15:50	Discussion	– Ms. Susan Espinueva	
15:50 – 16:10		Tea Break	
16:10 – 16:30	Summary of Issues, Conclusion, Recommendations	– Ms. Susan Espinueva	
	Vote of thanks by Commissioner, BTRC	– BTRC	
16:30	Adjourn		

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Appendix 2: List of Participants

ITU Workshop on Emergency Telecommunications for Disaster Management in Bangladesh

No	Name of Participant	Designation	Organization	Contact Number (Country Code: 8802)	E-mail
1	Ms. Susan Espinueva		ADPC		shenry112293@yahoo.com
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